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EXAMINER

EDMONDSON, LYNNE RENEE

ART UNIT

PAPER NUMBER

1725

DATE MAILED: 09/25/2003

13

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/868,573

Applicant(s)

ZEN, MITSUO

Examiner

Lynne Edmondson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 25-30, 35-43 and 45-52 is/are allowed.
- 6) ☒ Claim(s) 16-24, 31, 34, 44 is/are rejected.
- 7) ☒ Claim(s) 32 and 33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

1. Claims 16-18, 20-22 and 34 are rejected under 35 U.S.C. 102(a) as being anticipated by McAndrew (USPN 6095404).

McAndrew teaches a solder coated material formed by plating a layer of material having excellent solderability such as Ni or Au containing layers having a thickness of 1.27 to 5.5 microns (50 microinches to 220 microinches, col 2 lines 1-15) on Fe-Ni leads (col 4 lines 53-59) and then passing the difficult to solder material through molten solder to form a dip solder plating layer having a thickness of about 13 microns (500 microinches) (col 4 lines 20-32) by wave soldering (col 4 line 35). Although electroplating and hot dipping are taught, an identical structure can be formed by screen printing or electrolessly plating both layers. See also McAndrew claims 1 and 5-9.

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2. Claims 16, 18, 20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Siemens AG (DT 2340423 A).

Siemens teaches a solder coated material formed by plating a layer of material having excellent solderability such as Ni or Cu having a thickness of 1 micron on a substrate and then passing the difficult to solder material through molten solder to form a dip solder plating layer having a thickness of about 50 microns (abstract). Although electroplating and hot dipping are taught in the method, an identical structure can be formed by screen printing or vapor deposition of the layers.

3. Claims 16, 18-20, 22, 23, 31 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Izuta et al. (USPN 5609287).

Izuta teaches a solder coated material formed by plating a layer (second solder 5b) of material having excellent solderability such as solder having a thickness of 1 micron (figure 1 and col 2 lines 53-55, col 7 lines 51-54 and col 12 lines 55-60) on a substrate and then forming a second layer (first solder 4) having a thickness of 50 microns (col 2 lines 48-57, col 3 lines 10-18 and col 7 lines 8-15). The solderable material may be a Sn-Ag alloy (col 13 lines 1-7). An identical structure can be formed in a variety of ways including but not limited to dipping, screen printing, CVD and electroless plating. The substrate may be a lead frame (col 1 lines 20-25). See also Izuta claims 1-19.

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4. Claims 16-23 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyahara (USPN 5629559).

Miyahara teaches a solder coated material such as a lead frame (col 1 lines 1-12 and lines 39-55) formed by plating a layer of material having excellent solderability such as Ni, Cu or Au (col 7 lines 13-40) having a thickness of 2 microns (col 15 lines 45-65) on a substrate comprising Fe-Ni (col 7 lines 41-47) and then forming a solder layer having a thickness of 40 microns (col 15 lines 27-31). The solder or solderable material may be a Sn-Ag alloy (col 8 lines 51-67). An identical structure can be formed in a variety of ways including but not limited to dipping, screen printing, CVD and electroplating.

5. Claims 16, 18, 20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohno (USPN 4666078).

Ohno teaches a solder coated material formed by plating a layer of material having excellent solderability such as Ni or Cu (col 2 lines 5-23) having a thickness of 5 microns (col 4 lines 29-37) on a substrate and then passing the difficult to solder material through molten solder (bath) to form a dip solder plating layer having a thickness between 0.1 and 300 microns (col 4 lines 38-63 and col 5 lines 20-61). Although electroplating and hot dipping are taught in the method, an identical structure can be formed by screen printing or vapor deposition of the layers. See also Ohno claims 3-7, 11-16 and 19-22.

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6. Claims 16-18, 20-22, 24, 31, 34 and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by Geschwind (USPN 4331258).

Geschwind teaches a solder coated material formed by plating a layer of material having excellent solderability (gold or nickel) on a substrate comprising Fe-Ni (col 1 lines 25-32 and col 4 lines 12-27) wherein the plated layer is 1.2 to 2.5 microns and the solder layer is 50 microns (2 mils, col 2 lines 35-52). The molten solder is coated by dipping (col 4 lines 32-66). The method is used for bonding a lid to a package or lead frame (col 2 lines 53-64 and col 3 lines 1-12). See also Geschwind claims 1-7.

Response to Arguments

7. Regarding applicant's argument that McAndrew does not teach electroplating it is noted that the claims rejected are drawn to an article. The McAndrew article comprises a plated layer and solder layer having the thickness of the instant article. There is no indication of unexpected results by electroplating in particular rather than general plating by electroless plating or even screen printing. The Fe-Ni leads are soldered.

Therefore the 102 rejection of claims 16-18, 19-22 and 34 as anticipated by McAndrew stands.

8. Regarding applicant's argument that Siemens does not teach electroplating it is noted that the claims rejected are drawn to an article. The Siemens article comprises a

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plated layer and solder layer having the thickness of the instant article. There is no indication of unexpected results by electroplating in particular rather than general plating by electroless plating or even screen printing.

Therefore the 102 rejection of claims 16, 18, 20 and 22 as anticipated by Siemens stands.

9. Regarding applicant's argument that Izuta does not teach electroplating it is noted that the claims rejected are drawn to an article. The Izuta article comprises a plated layer or overlay and solder layer having the thickness of the instant article resulting in two conductive layers on the substrate. There is no indication of unexpected results by electroplating in particular rather than general plating by electroless plating or even screen printing.

Therefore the 102 rejection of claims 16, 18-20, 22, 23, 31 and 34 as anticipated by Izuta stands.

10. Regarding applicant's argument that Miyahara does not teach electroplating it is noted that the claims rejected are drawn to an article. The Miyahara article comprises a ground layer which can be formed by any method, a plating layer and solder layer having the thickness of the instant article resulting in two conductive layers on the substrate. There is no indication of unexpected results by electroplating in particular rather than general plating by electroless plating or even screen printing.

Therefore the 102 rejection of claims 16-23 and 31 as anticipated by Miyahara stands.

11. Regarding applicant's argument that Ohno does not teach electroplating it is noted that the claims rejected are drawn to an article. The Ohno article comprises a ceramic substrate, a plating layer and solder layer having the thickness of the instant article resulting in two conductive layers on the substrate. There is no indication of unexpected results by electroplating in particular rather than general plating by electroless plating or even screen printing.

Therefore the 102 rejection of claims 16, 18, 20 and 22 as anticipated by Ohno stands.

12. Regarding applicant's argument that Geschwind does not teach electroplating or hot dip coating see column 4 lines 55-66 which teach a plating layer particularly an electroplated layer (col 4 line 60) and dip coating in a solder bath (col 4 lines 58-60). However, it is noted that the structures and portions of claims 16 and 20 may comprise a plated layer and solder layer applied by any means which will result in the same structure. The picture frame is taught as a lid for covering a semiconductor package (col 2 lines 20-24). Although Kovar and Alloy 42 are disclosed as suitable but having poor environmental resistance (col 1 lines 25-32), the materials are coated with a plating of about 1 micron upon which is deposited about 50 microns of solder (col 2 lines 48-52) and tested (Table 1, col 3 lines 45-63). Stainless steel is one of the first 8

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materials which contains Fe and Ni and is potentially acceptable as a lid material (col 4 lines 13-19). Invar and Kovar are known, conventional lid materials.

Therefore the 102 rejection of claims 16-18, 20-22, 24, 31, 34 and 44 as anticipated by Geschwind stands.

Allowable Subject Matter

13. Claims 32 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter: The closest prior art teaches the invention essentially as claimed but teaches a single solder layer. See Potega (USPN 6152597). When multiple layers are taught, no thickness is disclosed. See Suzuki et al. (JPN 63-86254 A).

15. Claims 25-30, 35-43 and 45-52 are allowed.

16. The following is an examiner's statement of reasons for allowance: The closest prior art teaches the method essentially as claimed but does not teach electroplating in particular. See Geschwind (USPN 4331258) and McAndrew (USPN 6095404), which teach general and electroless plating.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne Edmondson whose telephone number is (703) 306-5699. The examiner can normally be reached on Monday through Thursday from 6:30 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (703) 308-3318. The fax phone numbers for

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the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 305-7115 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

Lynne Edmondson
Examiner
Art Unit 1725

 9/16/03

LRE
September 16, 2003